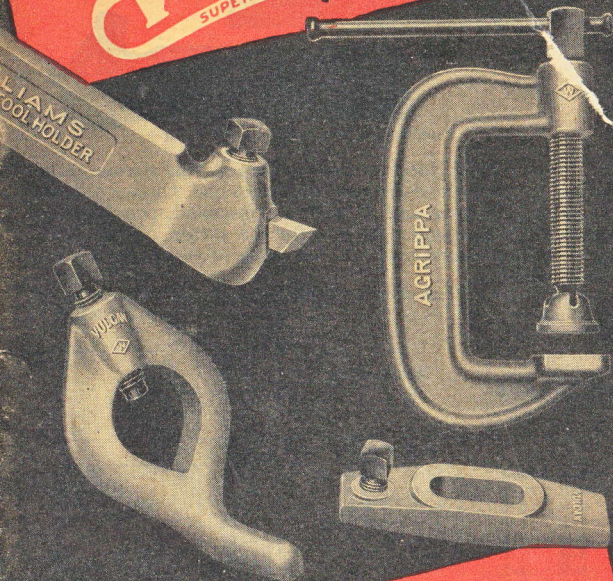


DECEMBER 1944

# MACHINISTS' TOOLS by WILLIAMS

SUPERIOR DROP-FORGED TOOLS



A. SHIMELL & CO.  
414 WEST BROADWAY  
NEW YORK 12, N. Y.

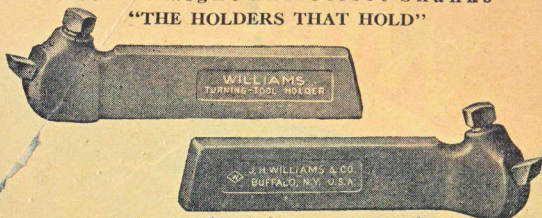
# WILLIAMS

SUPERIOR-DROP-FORGED TOOLS

## TURNING-TOOL HOLDERS

With Straight and Offset Shanks

"THE HOLDERS THAT HOLD"



Furnished with Cutter and Wrench

These rugged Holders are drop-forged from strong, tough steel, specially heat-treated and hardened. Cutter channel is unusually long and accurately broached, providing an absolutely true and rigid seat for the cutter. No "chattering" under heavy cuts—no breaking of costly high-speed steel cutters.

Number		Holder, Size	Cutter Size Square	LIST PRICE	
Right Hand	Left Hand			Cutter Only, High Speed Steel	Complete Tool with High Speed Cutter

### OFFSET SHANKS

000-R	000-L	5/16 x 1/2 x 4	3/16	\$ .15	\$2.70
00-R	00-L	5/16 x 3/4 x 4-1/2	3/16	.15	2.70
0-R	0-L	3/8 x 7/8 x 5	1/4	.20	2.85
1-R	1-L	1/2 x 1-1/8 x 6	5/16	.35	3.25
2-R	2-L	5/8 x 1-3/8 x 7	3/8	.55	4.00
3-R	3-L	3/4 x 1-5/8 x 8	7/16	.90	5.40
4-R	4-L	7/8 x 1-3/4 x 9	1/2	1.30	6.90
5-R	5-L	1 x 2 x 11	5/8	2.35	9.75
6-R	6-L	1-1/4 x 2-1/4 x 13	3/4	3.85	13.50

### STRAIGHT SHANKS

000-S	5/16 x 1/2 x 4	3/16	\$ .15	\$2.70
00-S	5/16 x 3/4 x 4-1/2	3/16	.15	2.70
0-S	3/8 x 7/8 x 5	1/4	.20	2.85
1-S	1/2 x 1-1/8 x 6	5/16	.35	3.25
2-S	5/8 x 1-3/8 x 7	3/8	.55	4.00
3-S	3/4 x 1-5/8 x 8	7/16	.90	5.40
4-S	7/8 x 1-3/4 x 9	1/2	1.30	6.90
5-S	1 x 2 x 11	5/8	2.35	9.75
6-S	1-1/4 x 2-1/4 x 13	3/4	3.85	13.50

Turning-Tools with "drop heads", for use on lathes with clamp-tool rests and low centers, can also be supplied; ask for literature.





## CARBIDE TURNING-TOOL HOLDERS

With Straight and Offset Shanks  
Furnished Without Cutter



Furnished with  
Wrench, but  
Without Cutter



In these Tools, the Cutter is held parallel to the shank. Consequently, Cutters can be so ground as to provide maximum support for the cutting edge. This feature, plus the extremely rigid Holder, is the recognized basis for the best performance of cemented carbide cutters.

Holders are broached for either square or flat standard Carbide Cutters, but are supplied WITHOUT CUTTERS. These may be obtained, on short notice, directly from the manufacturers of cemented carbide "tips". Inquiries sent us for Cutters with order for Holders, or separately, will be forwarded to leading manufacturers of cemented carbides, thereby assuring customers of direct, expert assistance from carbide cutter specialists.

Carbide Cutters, as supplied by their manufacturers, are available in many grades and standardized shapes of tips. Always specify material to be cut, nature of operation, form of cutter desired, its size and whether square, or flat. Flat cutters are recommended for general work.

Number			Holder, Size	For Cutter, Size		LIST Holder With- out Cutter
Straight Shank	Offset Shank			Square	Flat	
	Right Hand	Left Hand				

### For SQUARE CUTTERS

T-0-S	T-0-R	T-0-L	3/8 x 15/16 x 6	1/4	.....	\$3.20
T-1-S	T-1-R	T-1-L	1/2 x 1-1/4 x 7	5/16	.....	3.60
T-2-S	T-2-R	T-2-L	5/8 x 1-1/2 x 8	3/8	.....	4.50
T-3-S	T-3-R	T-3-L	3/4 x 1-3/4 x 9	7/16	.....	6.00
T-4-S	T-4-R	T-4-L	7/8 x 1-7/8 x 10	1/2	.....	7.60
T-5-S	T-5-R	T-5-L	1 x 2-1/8 x 12	5/8	.....	10.80

### \* For FLAT CUTTERS

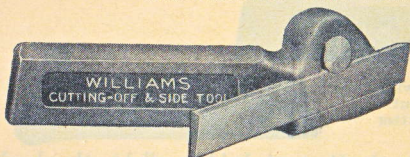
FT-1-S	FT-1-R	FT-1-L	1/2 x 1-1/4 x 7	....	5/16 x 7/16	\$4.40
FT-2-S	FT-2-R	FT-2-L	5/8 x 1-1/2 x 8	....	3/8 x 1/2	5.40
FT-3-S	FT-3-R	FT-3-L	3/4 x 1-3/4 x 9	....	7/16 x 9/16	7.20
FT-4-S	FT-4-R	FT-4-L	7/8 x 1-7/8 x 10	....	1/2 x 3/4	9.20
FT-5-S	FT-5-R	FT-5-L	1 x 2-1/8 x 12	....	5/8 x 7/8	12.90

\* DISCONTINUED—will supply until Stock is Exhausted.



## CUTTING-OFF & SIDE-TOOL HOLDERS

For Interchangeable Cut-Off and Side Blades  
Right and Left Hand Offset and Right Hand Straight Shanks  
"THE HOLDERS THAT HOLD"



ONE Holder  
takes BOTH  
Cutting-off  
and Side  
Blades



Furnished with Finished Cutter and Wrench

One Holder takes both Cutting-off and Side Blades, providing unique convenience and economy.

The Cam-fastening is always rapid and positive—the greater the pressure the tighter the lock. It offers full freedom for operation without removal of Holder from tool post.

The Cutter Blades are High Speed Steel, hardened and ground on both ends ready for use. By reversing the blade end for end it can be used in either Left or Right Hand Offset Shanks. They are interchangeable in Holders of corresponding size on opposite page, as explained below.

NOTE: For the convenience of users, the width of Cutter Blades and slot in the Holders for same is being altered. The new Cut-off Blades are interchangeable in other standard Holders.

This change is now effective on Holders with piece number carrying the prefix "N" (New). All other sizes will be altered similarly as the present stock of Holders is exhausted, but Extra Blades of former size to fit old Holders will be continued.

Always be sure to specify the Holder number when ordering Extra Blades. For instance, No. 20-R for Blade to fit old Holder; No. N-20-R for Blade to fit new Holder.

Cutting-Off Blade will be furnished, unless otherwise specified.

Number			Holder, Size		Cutter Blades, High Speed Steel, Finished Size						LIST PRICE			
Straight Shank Right Hand	Offset Shank				Cutting-Off Blade		Side Blade		Extra Blade, Finished		Complete Holder With Blade			
	Right Hand	Left Hand			OLD for Original Williams' Holders Only	* NEW Inter- changeable in Other Standard Holders	OLD for Original Williams' Holders Only	* NEW for New-Style Williams' Holders "N" Series						
										Cut-Off	Side	Cut-Off	Side	
N-020-R	N-030-R	N-030-L	5/16 x 13/16	5/64 x 1/2	5/64 x .475	1/8 x 1/2	1/8 x .475	\$ .60	\$ .60	\$2.85	\$2.85			
N-20-R	N-30-R	N-30-L	3/8 x 31/32	3/32 x 5/8	3/32 x .595	5/32 x 5/8	5/32 x .595	.65	.90	3.00	3.40			
N-21-R	N-31-R	N-31-L	1/2 x 1-3/16	1/8 x 3/4	1/8 x .735	3/16 x 3/4	3/16 x .735	.90	1.40	3.60	4.35			
N-22-R	N-32-R	N-32-L	5/8 x 1-3/8	1/8 x 7/8	1/8 x .870	1/4 x 7/8	1/4 x .870	1.30	2.30	4.50	6.00			
N-23-R	N-33-R	N-33-L	3/4 x 1-5/8	3/16 x 1	3/16 x .940	5/16 x 1	5/16 x .940	2.15	3.40	6.00	7.85			
N-24-R	N-34-R	N-34-L	7/8 x 1-3/4	3/16 x 1-1/8	3/16 x 1.100	3/8 x 1-1/8	3/8 x 1.100	2.90	5.00	7.50	10.65			
N-25-R	N-35-R	N-35-L	7/8 x 1-3/4	1/4 x 1-1/8	1/4 x 1.100	.....	.....	4.00	.....	8.60	.....			

\* New Cutter Blades will not fit old Holders, nor old Blades, new Holders.



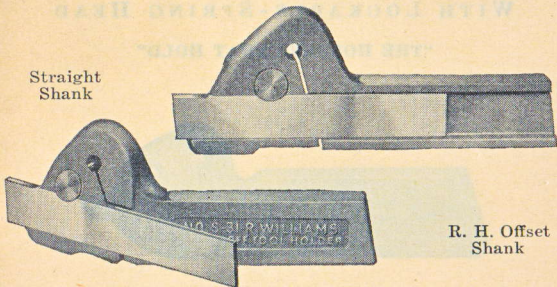


## SPRING CUTTING-OFF TOOL HOLDERS

With Straight and Right Hand Offset Shanks

"THE HOLDERS THAT HOLD"

Straight  
Shank



R. H. Offset  
Shank

Furnished with Finished Cutter and Wrench

These Spring Tools make comparatively simple all lathe cutting-off work—long thought the hardest of lathe operations. Due to the "goose neck" form of the Holder, the Cutter Blade is relieved of excess pressure; no chattering, no "climbing" of the work on the tool—the real cause of nearly all breakage of cutting-off tools. These Holders are also particularly efficient with automatic feed.

Cutter Blades are High Speed Steel, hardened and ground ready for use. They are interchangeable in Holders of corresponding size on opposite page, as explained below.

NOTE: For the convenience of users, the width of Cutter Blades and slot in the Holders for same is being altered. The new Cut-off Blades are interchangeable in other standard Holders.

This change is now effective on Holders with piece number carrying the prefix "N" (New). All other sizes will be altered similarly as the present stock of Holders is exhausted, but Extra Blades of former size to fit old Holders now in use will be continued.

Always be sure to specify the Holder number when ordering Extra Blades. For instance, No. S-21 for Blade to fit old Holder; No. NS-21 for Blade to fit new Holder.

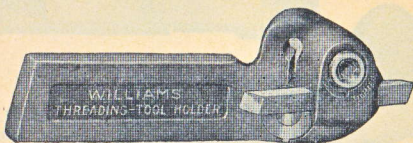
**Straight Shank Holders will be furnished, unless otherwise specified.**

Number		Holder, Size	Cutter Blades, High Speed Steel, Finished Size		LIST PRICE		Number	
Straight Shank	Offset Shank, Right Hand		OLD for Original Williams' Holders Only	* NEW Interchangeable in Other Standard Holders	Extra Blade, Finished, High Speed Steel	Complete Holder with Blade, High Speed Steel	Straight Shank	Offset Shank, Right Hand
NS-20	NS-30-RA	3/8 x 13/16	3/32 x 5/8	3/32 x .595	\$ .65	\$4.50	NS-20	NS-30-RA
NS-21	NS-31-R	3/8 x 31/32	1/8 x 3/4	3/32 x .595	.65	4.50	NS-20	NS-30-R
NS-22	NS-32-R	1/2 x 1 3/16	1/8 x 7/8	1/8 x .735	.90	5.40	NS-21	NS-31-R
NS-23	NS-33-R	5/8 x 1 3/8	3/16 x 1	1/8 x .870	1.30	6.75	NS-22	NS-32-R
		3/4 x 1 5/8		3/16 x .940	2.15	9.00	NS-23	NS-33-R

\* New Cutter Blades will not fit old Holders, nor old Blades, new Holders.



**THREADING-TOOL HOLDERS**  
**WITH LOCKABLE - SPRING HEAD**  
**"THE HOLDERS THAT HOLD"**



Furnished with Finished Cutter and Wrench

Williams' Threading-Tool Holders, with LOCKABLE-SPRING HEAD, are highly perfected tools for fine or coarse threading, or other Lathe work. The Nut for the Lockable-Spring head provides for the perfectly rigid backing required for coarse threading and heavy cuts; when loosened, the Holder becomes a spring-tool for finishing work. It is equally efficient as a Turning-Tool, for which purpose the High Speed Cutters furnished with the Turning-Tool Holders can be used.

The Cutter, made from High Speed Steel, is finished, ready for use. Each end is ground, the "V" point forming either an angle of 60° for U. S. Std. or 55° for Whitworth Std. threads, as desired.

Number New	Holder, Size	Cutter, Size Square	LIST PRICE		Number New
			Extra Finished Cutter, High Speed	Complete With High Speed Cutter	
S-50	3/8 x 7/8	1/4	\$ .45	\$4.15	S-50
S-51	1/2 x 1-1/8	5/16	.55	5.00	S-51
S-52	5/8 x 1-3/8	3/8	.70	6.40	S-52





## THREADING-TOOL HOLDERS

### WITH FORMED CUTTER

"THE HOLDERS THAT HOLD"



Furnished with Finished Cutter and Wrench

Williams' Threading-Tool Holders, with FORMED CUTTER (High Speed Steel), assure threads that fit perfectly, since in re-sharpening the Cutter, it is necessary to grind its top edge only. Consequently, the point will always retain the proper form and angle as originally supplied.

The High Speed Cutter is ground to an included angle of 60° and is backed off for proper clearance. Its rear, flat edge is eccentrically formed; the hardened stop screw, bearing against it, provides positive and accurate adjustment.

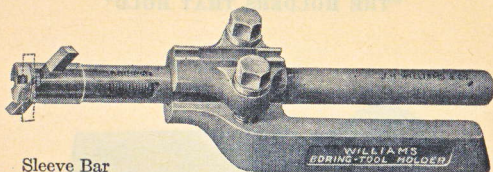
Number	Holder, Size	Cutter	LIST PRICE		Number
			Extra Finished Cutter, High Speed	Complete With High Speed Cutter	
C-050	5/16 x 3/4	Formed	\$2.65	\$4.15	C-050
C-50	3/8 x 7/8	"	2.65	4.15	C-50
C-51	1/2 x 1-1/8	"	3.15	5.00	C-51
C-52	5/8 x 1-3/8	"	4.15	6.40	C-52



## BORING - TOOL HOLDERS

Each Holder Takes Many Sizes of Bars

"THE HOLDERS THAT HOLD"



Sleeve Bar



Plain Bar

Furnished with either Sleeve or Plain Bar, 1 each 45° and 90° Cutter and Finished Wrenches.

Each Boring Tool holds securely many sizes of Bars without requiring bushings or sleeves. Any size Bar within the capacity of the Holder can be inserted instantly; no lost time looking for loose parts.

Standard size Sleeve Bar will be supplied, unless otherwise specified.

No.	Holder, Size	Holder, Capacity for Bars, Size Diameter	Standard Bar, Size Diameter	LIST PRICE	
				Complete Holder	
				With Plain Bar,  High Speed Cutters	With Sleeve Bar,  High Speed Cutters
080	5/16 x 3/4	3/16 to 1/2	1/2	\$4.30	\$ 4.90
80	3/8 x 7/8	1/4 to 5/8	5/8	4.30	4.90
81	1/2 x 1-1/8	1/4 to 3/4	3/4	5.00	5.80
82	5/8 x 1-3/8	3/8 to 15/16	15/16	6.50	7.65
83	3/4 x 1-5/8	1/2 to 1-1/8	1-1/8	9.60	10.85

Bar and Cutter details on following page.

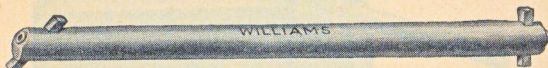




## BORING-BARS AND CUTTERS FOR WILLIAMS' BORING-TOOL HOLDERS AND POSTS



Sleeve Bar



Plain Bar

Furnished with 2 Cutters and Wrench

Details of Holders on previous page; Posts, on page 11.

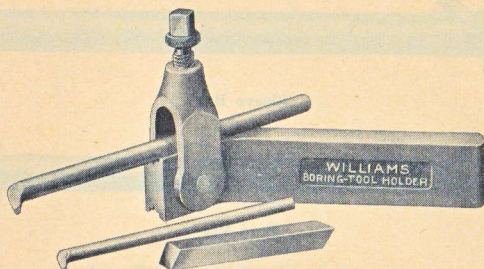
Boring-Bars Approximate Size		For Use with Holder and Post Num- ber	Cutters		LIST PRICE		
			Size	For Use At Angles of	Cutter Only  High Speed Steel	Complete Bar	
Plain	Sleeve					Plain with High Speed Cutters	Sleeve with High Speed Cutters
$\frac{1}{2} \times 8\frac{1}{8}$	$\frac{1}{2} \times 7\frac{5}{8}$	080-83	$\frac{3}{16} \times 1$	90°	\$ .10	\$ 2.40	\$ 3.00
		2-3	$\frac{3}{16} \times 1\frac{1}{2}$	45°	.12		
$\frac{5}{8} \times 10\frac{1}{8}$	$\frac{5}{8} \times 9\frac{1}{8}$	80-83	$\frac{3}{16} \times 1$	90°	.10	2.40	3.00
		2-4	$\frac{3}{16} \times 1\frac{1}{2}$	45°	.12		
$\frac{3}{4} \times 12\frac{1}{8}$	$\frac{3}{4} \times 11$	81-83	$\frac{1}{4} \times 1\frac{1}{4}$	90°	.15	2.95	3.75
		2-5	$\frac{1}{4} \times 2$	45°	.19		
$1\frac{5}{16} \times 14\frac{1}{8}$	$1\frac{5}{16} \times 13\frac{1}{4}$	82-83	$\frac{5}{16} \times 1\frac{1}{2}$	90°	.24	4.25	5.40
		2-5	$\frac{5}{16} \times 2\frac{1}{2}$	45°	.32		
$1\frac{1}{8} \times 16\frac{3}{4}$	$1\frac{1}{8} \times 16$	83	$\frac{3}{8} \times 1\frac{7}{8}$	90°	.35	6.25	7.50
		2-5	$\frac{3}{8} \times 3$	45°	.50		
$1\frac{5}{16} \times 20$	$1\frac{5}{16} \times 19$	2-5	$\frac{3}{8} \times 2\frac{1}{8}$	90°	.40	9.00	10.50
			$\frac{3}{8} \times 3\frac{1}{4}$	45°	.55		
$1\frac{1}{2} \times 23\frac{1}{2}$	$1\frac{1}{2} \times 23\frac{1}{4}$	3-5	$\frac{7}{16} \times 2\frac{1}{4}$	90°	.60	11.75	13.50
			$\frac{7}{16} \times 3\frac{3}{8}$	45°	.85		
$1\frac{13}{16} \times 28$	$1\frac{13}{16} \times 27\frac{1}{4}$	4-5	$\frac{1}{2} \times 2\frac{5}{8}$	90°	.90	17.50	19.50
			$\frac{1}{2} \times 4$	45°	1.30		
$2\frac{1}{4} \times 34$	$2\frac{1}{4} \times 33$	5	$\frac{5}{8} \times 3\frac{1}{8}$	90°	1.70	31.00	34.50
			$\frac{5}{8} \times 4\frac{3}{4}$	45°	2.35		



## LIGHT BORING - TOOL HOLDERS

For Small, Light Boring, Turning, etc.  
Each Holder Takes Several Sizes of Bars

"THE HOLDERS THAT HOLD"



Furnished with 2 Bars, 1 Square Cutter and Wrench.

This combination Holder is very handy and economical for tool room use and for all small work—not only in boring small diameters, threading, etc., but also in turning.

**BORING.** Each tool will hold a number of sizes of Bars; two, varying  $1/8$ " in diameter, are supplied with each Holder. The Bars are High Speed steel, carefully hardened and ground, ready for use.

**TURNING.** The Holder, with offset shank, is reversible for right and left hand work. A hardened, High Speed Steel square Cutter with ends beveled to a "diamond point" for easy grinding to desired form, is supplied with each tool.

No.	Holder, Size Shank	With Each Holder		LIST PRICE	
		2 Bars High Speed Steel Diam.	1 High Speed Square Cutter	Square Cutter Only	Com- plete Holder
15	$3/8 \times 3/4$	$1/8$ and $1/4$	$1/4$	\$ .20	\$4.15
16	$1/2 \times 1$	$3/16$ and $5/16$	$5/16$	.35	5.25
17	$5/8 \times 1-1/4$	$1/4$ and $3/8$	$3/8$	.55	6.75

### EXTRA BORING BARS

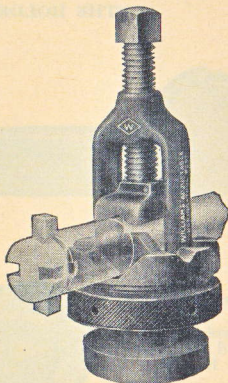
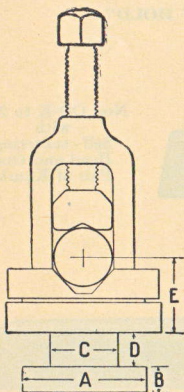
Size.....	$1/8 \times 4$	$3/16 \times 4-1/2$	$1/4 \times 5$	$5/16 \times 6$	$3/8 \times 7$	$7/16 \times 8$
For Holders .	15 & 16	15 to 17	15 to 17	15 to 17	16 & 17	17
Price, Each..	\$ .30	\$ .40	\$ .50	\$ .60	\$ .80	\$1.10





## ADJUSTABLE BORING-TOOL POSTS

Each Post Takes Many Sizes of Bars



Furnished with either Sleeve or Plain Bar, 1 each 45° and 90° Cutter and Wrenches.

Unless otherwise specified standard size Sleeve Bar will be supplied.  
Bar and Cutter details on page 9.

Number .....	2	3	4	5
Post — Length over all, without Screw .....	6-5/8	7-5/8	9-1/8	11-1/8
*"T" Slot Flange—				
Diameter, A .....	3	3-1/2	4-1/4	5
Thickness, B .....	5/8	3/4	7/8	1-1/16
*"T" Slot Neck—				
Diameter, C .....	1-5/8	1-3/4	2	2-1/4
Length, D .....	3/4	13/16	1	1-1/4
Center Height, E .....	1-13/16	1-7/8	2-3/8	2-3/4
Post Capacity for Bars—				
Size .....	1/2 to 1-5/16	1/2 to 1-1/2	5/8 to 1-13/16	3/4 to 2-1/4
Standard Bar—Size .....	1-5/16	1-1/2	1-13/16	2-1/4
List—Complete Post:				
With Sleeve Bar—				
High Speed Cutters .....	\$27.00	\$37.50	\$60.00	\$90.00
With Plain Bar—				
High Speed Cutters .....	25.50	35.75	58.00	86.50

\*The "T" Slot Flange and Neck are furnished large to allow for fitting to individual machines. For special finishing to specified dimensions, an extra charge of \$2.00 net, each, will be made.



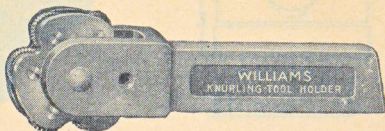
## KNURLING-TOOL HOLDERS IN TWO PATTERNS

“THE HOLDERS THAT HOLD”



Nos. OO-K to 2-K  
with  
Self-centering  
Head and One  
Pair of Knurls

Nos. 11-K, 12-K  
with  
Revolving Head  
and 3 Pairs of  
Knurls



Williams' Knurling Tools are furnished in two patterns:—

OO-K to 2-K, with self-centering head, are fitted with ONE pair of Knurls, fine, medium or coarse—see illustration, following page. Unless otherwise specified, Medium Diamond Knurls will be supplied.

11-K and 12-K carry THREE pairs of Knurls, fine, medium and coarse—see illustration, following page. Fitted in revolving head for use as desired, without loss of time in changing from one grade of knurling to another.

Knurls are furnished in pairs, either “Diamond” or “Straight-Line” pattern; fine, medium and coarse pitch. Described on following page.

No.	Holder, Size	Standard Knurls, Size		LIST PRICE		No.
		Diam.	Face	Extra Knurls, Pair	Complete Holder	
OO-K	5/16 x 3/4 x 5	5/8	3/16	\$1.00	\$5.65	OO-K
O-K	3/8 x 7/8 x 5-1/2	5/8	3/16	1.00	6.00	O-K
1-K	1/2 x 1-1/8 x 6-5/8	3/4	1/4	1.15	6.75	1-K
2-K	5/8 x 1-3/8 x 7-1/2	3/4	1/4	1.15	8.00	2-K
11-K	1/2 x 1-1/8 x 6-5/8	3/4	1/4	1.15	9.00	11-K
12-K	5/8 x 1-3/8 x 6-5/8	3/4	1/4	1.15	10.50	12-K



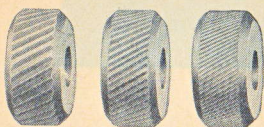


# KNURLS FOR WILLIAMS' KNURLING-TOOL HOLDERS

"THE HOLDERS THAT HOLD"

**Diamond Pattern**

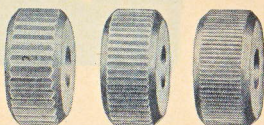
**Straight-Line Pattern**



Coarse  
14 Pitch

Medium  
21 Pitch

Fine  
33 Pitch

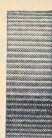


Coarse  
14 Pitch

Medium  
21 Pitch

Fine  
33 Pitch

Note: "Pitch" means number of teeth per linear inch.



Illustrations above show actual size of Knurling.

Since Williams' Knurls are accurately cut, sharp and perfect teeth of similar uniformity are formed in the knurled product. The hole is concentric with the cutting face. All Knurls are made from high grade tool steel and are specially hardened and tempered.

Supplied in pairs in two patterns; "Diamond" and "Straight-Line". When ordering, always state pattern and pitch desired.

"Diamond" pattern, Medium (21 pitch) will be furnished, unless otherwise specified.

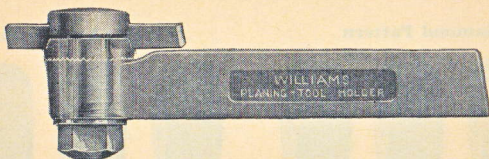
For Knurling Tool No.	Knurls, Size				LIST PRICE Per Pair	For Knurling Tool No.
	Diameter	Thickness	Face	Hole		
00-K	5/8	5/16	3/16	*7/32	\$1.00	00-K
0-K	5/8	5/16	3/16	*7/32	1.00	0-K
1-K	3/4	3/8	1/4	1/4	1.15	1-K
2-K	3/4	3/8	1/4	1/4	1.15	2-K
11-K	3/4	3/8	1/4	1/4	1.15	11-K
12-K	3/4	3/8	1/4	1/4	1.15	12-K

\* Hole, old diameter 1/4 inch.



## PLANING-TOOL HOLDERS

"THE HOLDERS THAT HOLD"



Furnished with Cutter and Wrench

These rugged tools provide 24 different angles of cutter adjustment instead of the usual 5—a real advantage when working in close quarters. Excellent, also, as an offset turning tool.

Reversal of the Holder in the tool-post, so as to bring the cutting point behind the center of the shank, makes it an ideal "goose-neck" tool.

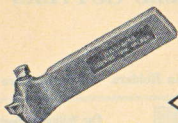
The construction assures perfect seat and holding qualities for the Cutters; the convex face of Clamp Nut provides uniform locking pressure for Cutters of either square or rectangular form.

The serrated washer, or Adjustment Ring, which sustains the fastening and working strains, is hardened and tempered. If it wears in long service, a new Ring *only* is required—not a complete Holder.

No.	Holder, Size	Cutter, Size	LIST PRICE		
			Extra Adjust-ment Ring	Cutters Only High Speed Steel	Com-plete Holder with High Speed Cutters
91	1/2 x 1 x 7	1/4 x 3/8	\$ .60	\$ .35	\$4.65
92	5/8 x 1-1/4 x 8-1/2	5/16 x 7/16	.68	.55	6.00
93	3/4 x 1-1/2 x 10-1/4	3/8 x 1/2	.83	.80	7.85
94	1 x 1-3/4 x 13-1/4	1/2 x 3/4	1.05	1.95	12.40
95	1-3/8 x 2 x 16-1/2	5/8 x 7/8	1.50	3.35	21.75
96	1-3/4 x 2-3/8 x 19	3/4 x 1	2.25	5.00	39.00
97	2-1/8 x 2-3/4 x 22	7/8 x 1-1/8	3.38	8.20	57.00



## LATHE TOOL SETS



RIGHT HAND OFFSET  
TURNING-TOOL HOLDER  
WITH ONE CUTTER



LEFT HAND OFFSET  
TURNING-TOOL HOLDER  
WITH ONE CUTTER



STRAIGHT TURNING-TOOL HOLDER  
WITH ONE CUTTER



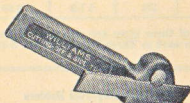
RIGHT HAND STRAIGHT  
CUTTING-OFF & SIDE TOOL HOLDER  
WITH ONE EACH CUTTING-OFF AND  
SIDE BLADE



THREADING-TOOL  
HOLDER  
WITH FORMED CUTTER



RIGHT HAND OFFSET  
CUTTING-OFF & SIDE TOOL HOLDER  
WITH ONE EACH CUTTING-OFF  
AND SIDE BLADE



LEFT HAND OFFSET  
CUTTING-OFF & SIDE TOOL HOLDER  
WITH ONE EACH CUTTING-OFF  
AND SIDE BLADE



BORING-TOOL HOLDER  
WITH SLEEVE BAR AND TWO CUTTERS

Six "always ready" Sets of Williams' Tool Holders provide for complete lathe service—Turning, Boring, Threading, Cutting-off and Side Work—in a *minimum number of tools*, unequalled elsewhere. High Speed Cutters furnished throughout.

Set No.	For Lathes of Approx. Swing, Inches	Holder, Size Shank	Quantity of Tools in Set	LIST Complete Set, with High Speed Cutters	Set No.
00	7 to 10	5/16x 3/4	8	\$27.50	00
0	10 to 12	3/8 x 7/8	8	29.30	0
1	14 to 16	1/2 x 1-1/8	8	35.50	1
2	16 to 18	5/8 x 1-3/8	8	46.40	2
† 3	18 to 20	3/4 x 1-5/8	7	55.25	† 3
*† 4	24 to 36	7/8 x 1-3/4	6	58.20	*† 4

\* Set No. 4 furnished without Boring-Tool Holder.

† Sets Nos. 3 and 4 furnished without Threading-Tool Holder.





## HIGH SPEED STEEL CUTTERS


Require minimum of grinding only for use in Holders. All Cutters are hardened.

For Turning-Tool Holders				For Williams' Boring Bars				
No.	CUTTER, SIZE		LIST Each, High Speed	Bar Diam.	For Use at Angle of	CUTTER, SIZE		LIST Each, High Speed
	Square	Length				Square	Length	
000	3/16	1 3/4	\$ .15	1/2	90°	3/16	1	\$ .10
00 & 0200	3/16	1 7/8	.15		45°	3/16	1 1/2	.12
0 & 200	1/4	2 3/8	.20	5/8	90°	3/16	1	.10
1 & 201	15/16	2 7/8	.35		45°	3/16	1 1/2	.12
2 & 202	13/8	3 3/8	.55	3/4	90°	1/4	1 1/4	.15
3	7/16	3 3/4	.90		45°	1/4	2	.19
4 & 204	1/2	4 1/8	1.30	15/16	90°	5/16	1 1/2	.24
5	5/8	4 3/4	2.35		45°	5/16	2 1/2	.32
6	3/4	5 1/2	3.85	1 1/8	90°	3/8	1 7/8	.35
					45°	3/8	3	.50
				1 5/16	90°	3/8	2 1/8	.40
					45°	3/8	3 1/4	.55
				1 1/2	90°	7/16	2 1/4	.60
					45°	7/16	3 3/8	.85
				1 13/16	90°	1/2	2 5/8	.90
					45°	1/2	4	1.30
				2 1/4	90°	5/8	3 1/8	1.70
					45°	5/8	4 3/4	2.35

† Cutters of these sizes are also suitable for turning when used in Threading-Tool, Nos. S-50 to S-52.


For Threading-Tool Holders				For Planing-Tool Holders			
No.	CUTTER, SIZE		LIST Each, High Speed Finished Cutter	No.	CUTTER, SIZE		LIST Each, High Speed
	Square	Length			Flat	Length	
S-50	1/4	2 3/8	\$ .45	91	1/4 x 3/8	2 1/2	\$ .35
S-51	5/16	2 7/8	.55	92	5/16 x 7/16	3	.55
S-52	3/8	3 3/8	.70	93	3/8 x 1/2	3 1/2	.80
				94	1/2 x 3/4	4 1/4	1.95
				95	5/8 x 7/8	5	3.35
				96	3/4 x 1	6	5.00
				97	7/8 x 1 1/8	7	8.20

Turning-Tool Cutters marked † are suitable for turning work in Threading-Tool Holders. See table above.



### Bevel For Cutting-Off Tool Holders

OLD Cutter Blade Finished		*NEW Cutter Blade Finished		LIST Each, High Speed,
No.	Size	No.	Size	
020-030	5/64 x 1/2	N-020-N-030	5/64 x .475	\$ .60
20- 30	3/32 x 5/8	N20- N30	3/32 x .595	.65
21- 31	1/8 x 3/4	N21- N31	1/8 x .735	.90
22- 32	1/8 x 7/8	N22- N32	1/8 x .870	1.30
23- 33	3/16 x 1	N23- N33	3/16 x .940	2.15
24- 34	3/16 x 1-1/8	N24- N34	3/16 x 1.100	2.90
25- 35	1/4 x 1-1/8	N25- N35	1/4 x 1.100	4.00



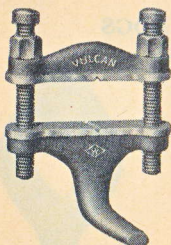
### Heavy Bevel For Side-Tool Holders

OLD Cutter Blade Finished		*NEW Cutter Blade Finished		LIST Each, High Speed
No.	Size	No.	Size	
020-030	1/8 x 1/2	N-020-N-030	1/8 x .475	\$ .60
20- 30	5/32 x 5/8	N20- N30	5/32 x .595	.90
21- 31	3/16 x 3/4	N21- N31	3/16 x .735	1.40
22- 32	1/4 x 7/8	N22- N32	1/4 x .870	2.30
23- 33	5/16 x 1	N23- N33	5/16 x .940	3.40
24- 34	3/8 x 1-1/8	N24- N34	3/8 x 1.100	5.00

\* New Cutter Blades will not fit old Holders, nor old Blades, new Holders.

# WILLIAMS

SUPERIOR DROP-FORGED TOOLS



## "VULCAN" CLAMP LATHE DOGS

Drop-forged from a strong, tough grade of carefully selected steel, and heat-treated after forging which increases their strength.

The screws, threaded U. S. Standard, are made of a special grade of steel, and are hardened and tempered. The nuts are case-hardened.

No.	Capacity		Screws		LIST PRICE Dog Complete	No.
	Maximum Opening	Distance Between Screws	Diameter	Length Under Head		
61	1-5/8	1-3/4	5/16	2-3/4	\$3.00	61
62	1-7/8	2-1/4	3/8	3-5/16	4.00	62
63	2-1/2	2-3/4	7/17	4-1/4	5.00	63
64	3-1/4	3-1/2	1/2	5-3/8	7.00	64



## "VULCAN" MILLING MACHINE DOGS

Designed with flat tail to prevent back-lash in taper work.

The heads are made of sufficient size to permit re-tapping for one or two larger sizes of Screws as the threads wear.

The screws, threaded U. S. Standard, are made of a special grade of steel, and are hardened and tempered.

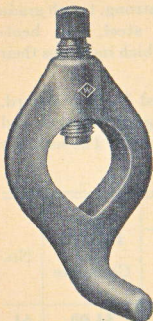
No.	Capacity	Screw		LIST PRICE		No.
		Diameter	Length Under Head	Extra Screws, Each	Dogs, Complete	
42	1/2	3/8	1-1/4	\$ .20	\$1.10	42
43	3/4	7/16	1-5/8	.24	1.20	43
44	1	1/2	2	.30	1.40	44
45	1-1/4	1/2	2-1/4	.32	1.70	45
46	1-1/2	9/16	2-3/8	.36	2.00	46
47	1-3/4	5/8	2-1/2	.40	2.40	47
48	2	5/8	2-7/8	.40	2.80	48

An attractive discount is given; see your jobber.



## “VULCAN” DROP-FORGED LATHE DOGS

With Bent and Straight Tail



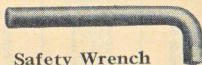
Non-Safety Dog



Safety Dog



Safety Dog



Safety Wrench

Furnished with Interchangeable Screws,  
either Safety or Non-Safety

Full description on opposite page.

Unless otherwise specified, Dogs with Safety Screws will be supplied

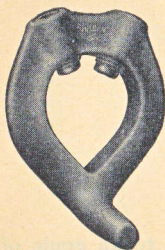
Number		Capac- ity	SCREWS						LIST PRICE	
Bent Tail	Strgt. Tail		Square Head			Safety			Safety Dog Wrench, Extra	Dog Com- plete with Either Screw
			Size		List Price, Each	Size		List Price, Each		
			Diam.	Length Under Head		Diam.	Extreme Length			
1	21	3/8	7/16	1	\$.25	7/16	5/8	\$.20	\$.12	\$1.00
2	22	1/2	9/16	1 1/4	.30	9/16	13/16	.24	.14	1.10
3	23	3/4	5/8	1 5/8	.37	5/8	1 1/16	.30	.16	1.20
4	24	1	5/8	2	.40	5/8	1 1/4	.36	.16	1.40
5	25	1 1/4	3/4	2 1/4	.55	3/4	1 3/8	.42	.20	1.70
6	26	1 1/2	7/8	2 7/16	.75	7/8	1 11/16	.60	.24	2.00
7	27	1 3/4	7/8	2 7/16	.75	7/8	1 11/16	.60	.24	2.40
8	28	2	1	2 3/4	.95	1	1 7/8	.72	.30	2.80
9	29	2 1/2	1 1/8	3	1.15	1 1/8	2	.86	.38	3.60
10	30	3	1 1/4	3 1/4	1.35	1 1/4	2 1/8	1.04	.48	4.60
11	31	3 1/2	1 3/8	3 1/2	1.60	1 3/8	2 1/2	1.26	.60	6.00
12	32	4	1 1/2	3 3/4	1.90	1 1/2	2 5/8	1.50	.74	9.00
13	33	5	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	.90	16.00

An attractive discount is given; see your jobber.

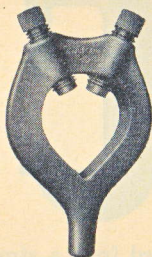




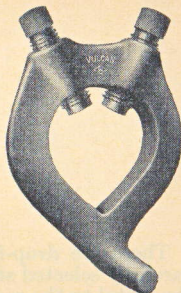
**"VULCAN"**  
**DROP-FORGED HEAVY SERVICE LATHE DOGS**  
 With Bent and Straight Tail



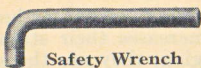
**Safety Dog**



**Non-Safety Dog**



**Non-Safety Dog**



**Safety Wrench**

**Furnished with Interchangeable  
Screws, either Safety or Non-Safety.**

Safety-for-the-operator and better balance when on the lathe are material improvements which have been attained in this design.

The Screws are of special steel, hardened and tempered, and are threaded U. S. Standard, except that those above 1 inch diameter have eight threads per inch. They are supplied in two types, Safety and Non-Safety which are interchangeable.

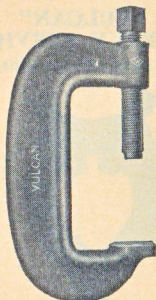
When ordering extra Screws, please state whether Safety or Non-Safety type is wanted; if latter, specify also diam. of screw.

**Unless otherwise specified, Dogs with Safety Screws will be supplied**

Number		SCREWS						LIST PRICE	
		Square Head			Safety			Safety Dog Wrench, Extra	Dog Complete with Either Screw
		Size		List Price, Each	Size		List Price, Each		
Bent Tail	Strgt. Tail	Diam.	Length Under Head			Diam.		Extreme Length	
112	132	1 1/2	3 3/4	\$1.90	1 1/2	2 5/8	\$1.50	\$ .74	\$16.00
113	133	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	.90	24.00
114	134	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	1.10	34.00

**An attractive discount is given; see your jobber.**

# WILLIAMS' "VULCAN" DROP-FORGED HEAVY SERVICE "C" CLAMPS



These are drop-forged from a strong, tough grade of carefully selected steel, and their form is such as to utilize the metal to the greatest advantage.

They are subjected to a refining process, or heat-treatment, after forging, which increases their strength and reduces the liability of springing; they are the strongest "C" clamp on the market.

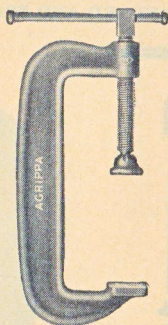
The Screws, threaded U. S. Standard, are made of a special grade of steel, and are hardened and tempered.

With long Screws, minimum capacity of all Clamps is 0.

Number	Capacity		Depth of Throat from Center of Screw	Extreme Dimensions of Body		Standard Screw		LIST PRICE		
	Maximum	Minimum with Standard Screw		Length	Width	Diameter	Length Under Head	Extra Screw		Clamp Complete with either Screw
								Standard Each	Long Each	
0	3/4	0	3/4	2 1/4	2	5/16	1 1/2	\$ .20	.....	\$1.00
1	1-1/4	0	1 1/8	3 1/4	2 3/4	3/8	2 1/4	.24	.....	1.50
1-1/2	1-3/4	1 1/16	1 1/2	4 1/4	3 5/8	1/2	2 1/4	.28	\$ .80	2.50
2	2-1/4	7/8	1 3/4	5 1/2	4 1/2	5/8	2 7/8	.40	1.16	3.50
3	3-1/4	1 5/16	2 3/8	7 1/4	5 3/4	3/4	3 3/4	.56	1.56	5.00
4	4-1/2	2	2 3/4	8 7/8	6 1/2	7/8	4 1/2	.76	2.00	6.50
5	5-1/2	2 1/2	3 1/8	10 3/8	7	7/8	5 3/8	1.00	2.50	8.00
6	6-1/2	3 1/16	3 3/8	12	7 7/8	1	5 7/8	1.30	3.10	10.00
8	8-1/2	4 1/4	3 3/4	14 3/8	8 1/2	1 1/8	7	1.70	4.20	14.00
10	10-1/2	6 3/8	4 7/8	16 7/8	9	1 1/8	7	1.70	5.10	19.00
12	12-1/2	7 5/8	4 1/2	19 3/8	9 3/4	1 1/4	8	2.40	7.20	25.00

An attractive discount is given; see your jobber.

# WILLIAMS' "AGRIPPA" DROP-FORGED GENERAL SERVICE "C" CLAMPS



Drop-forged from a strong, tough grade of carefully selected steel, these clamps are designed to afford the service formerly rendered by the heavier and bulkier steel clamps of other processes of manufacture. They are also heat-treated, after forging, to increase their strength and reduce the liability of springing.

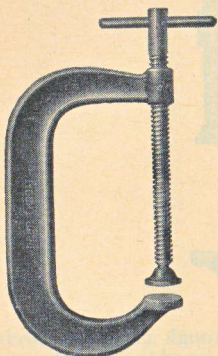
The Screws, threaded U. S. Standard, are made of a special grade of steel, well adapted to the purpose and are hardened and tempered. The swivels are drop-forged.

Number	Capacity		Depth of Throat from Center of Screw	Extreme Dimension of Body		Screw		Size Handle		Approximate Weight Each, Lbs.	LIST PRICE	
	Maximum	Minimum		Length	Width	Diameter	Lgth. under Hd. including Swivel	Diameter	Length		Extra Screw, Handle and Swivel	Clamp Complete
103	3	0	2	6 $\frac{7}{8}$	4 $\frac{3}{8}$	5 $\frac{5}{8}$	5 $\frac{5}{8}$	5 $\frac{5}{8}$	5 $\frac{1}{2}$	2 $\frac{5}{8}$	\$1.20	\$4.00
104	4	0	2 $\frac{3}{8}$	8 $\frac{1}{4}$	5 $\frac{1}{8}$	3 $\frac{3}{4}$	6 $\frac{7}{8}$	3 $\frac{3}{4}$	7	4 $\frac{1}{4}$	1.40	4.50
106	6	2	2 $\frac{1}{2}$	10 $\frac{3}{8}$	5 $\frac{3}{8}$	3 $\frac{3}{4}$	6 $\frac{7}{8}$	3 $\frac{3}{4}$	7	5 $\frac{1}{2}$	1.40	5.50
108	8	4	2 $\frac{5}{8}$	12 $\frac{1}{2}$	5 $\frac{1}{2}$	3 $\frac{3}{4}$	6 $\frac{7}{8}$	3 $\frac{3}{4}$	7	7	1.40	6.50
110	10	6	2 $\frac{3}{4}$	14 $\frac{5}{8}$	5 $\frac{3}{4}$	3 $\frac{3}{4}$	6 $\frac{7}{8}$	3 $\frac{3}{8}$	7	7 $\frac{1}{2}$	1.40	7.50
112	12	8	2 $\frac{7}{8}$	16 $\frac{7}{8}$	6	3 $\frac{3}{4}$	6 $\frac{7}{8}$	3 $\frac{3}{8}$	7	9 $\frac{1}{2}$	1.40	8.50
115	15	10	3 $\frac{1}{16}$	20 $\frac{1}{4}$	6 $\frac{1}{2}$	7 $\frac{7}{8}$	8 $\frac{1}{8}$	7 $\frac{7}{16}$	8	13 $\frac{1}{2}$	2.40	11.00
118	18	13	3 $\frac{1}{4}$	23 $\frac{1}{2}$	7	7 $\frac{7}{8}$	8 $\frac{1}{8}$	7 $\frac{7}{16}$	8	17	2.40	14.00

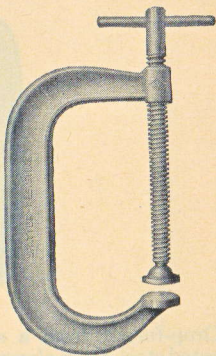
An attractive discount is given; see your jobber.



# WILLIAMS' DEEP THROAT "BODY BUILDERS" DROP-FORGED "C" CLAMPS FOR LIGHT DUTY TWO STYLES—STANDARD AND SPATTER-RESISTING



Standard



Spatter-Resisting

Especially designed for use where the clearance provided by a deep throat is required. Drop-Forged from strong, special steel and heat-treated, they combine dependable strength with minimum weight. Finished in two styles:—

**Standard** for body-builders, woodworkers and kindred trades. All parts, except screws, are shot-blasted.

**Spatter-Resisting** for welding, completely Cadmium-plated to resist the adherence of welding spatter to the body, swivel and screw.

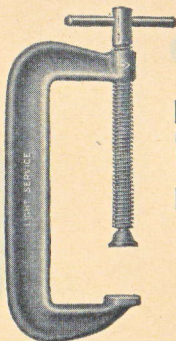
The Screws are made from tough, wrought steel, heat-treated and threaded especially for strength and rapid adjustment. Furnished with wrought steel Swivel, as illustrated.

**Standard Clamps will be furnished unless otherwise specified.**

Number		Capacity		Depth of Throat from Center of Screw	Screw		LIST PRICE			
							Standard		Spatter-Resisting	
Standard	Spatter-Resisting	Maximum	Minimum		Diameter	Length Over All	Screw and Swivel	Clamps, Complete	Screw, and Swivel	Clamps, Complete
402	402-S	2	0	2	1½	47⅝	\$ .60	\$ 1.50	\$ .90	\$ 1.80
403	403-S	3	0	2 ⅜	1½	61⅝	.70	1.80	1.10	2.25
404	404-S	4	0	2 ¾	1½	81⅝	.80	2.20	1.35	2.90
406	406-S	6	0	3 ⅝	1½	101½	1.00	3.00	1.60	3.75
408	408-S	8	2	4 1 ⅝	1½	11	1.20	4.00	1.85	4.75
410	410-S	10	3	5 ⅜	1½	12	1.50	5.00	2.10	6.00
412	412-S	12	4	5 ¾	1½	13 ¼	2.00	6.50	2.60	7.50

An attractive discount is given; see your jobber.

# WILLIAMS' "LIGHT SERVICE" DROP-FORGED "C" CLAMPS



## DISCONTINUED

**Will supply until  
present stock is  
exhausted.**

Drop-forged from specially selected steel and heat-treated to increase their strength and to reduce the liability of springing. Their design is best adapted for use in the various wood and metal working fields which do not demand the extremes of strength and service which "Vulcan" and "Agrippa" Clamps provide. They take the place of tools less dependable, yet frequently more costly.

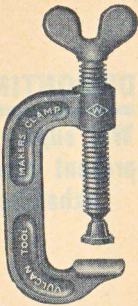
The Screws are made from tough, wrought steel and are threaded especially for strength and rapid adjustment.

Number	Capacity		Depth of Throat from Center of Screw	Extreme Dimensions of Body		Screw		Approximate Weight Each, Lbs.	LIST PRICE	
	Maximum	Minimum		Length	Width	Diameter	Length Over All		Extra Screw, Handle and Swivel	Clamps, Complete
502	2	0	1 $\frac{3}{4}$	4 $\frac{3}{8}$	3 $\frac{1}{4}$	1 $\frac{1}{2}$	4 $\frac{3}{8}$	3 $\frac{1}{4}$	\$ .60	\$ 1.50
503	3	0	2	5 $\frac{1}{2}$	3 $\frac{5}{8}$	1 $\frac{1}{2}$	5 $\frac{3}{8}$	1 $\frac{1}{4}$	.70	1.80
504	*4	0	2 $\frac{3}{8}$	6 $\frac{7}{8}$	4 $\frac{3}{8}$	5 $\frac{5}{8}$	7	2	.80	2.20
506	6	0	3	9 $\frac{3}{8}$	5 $\frac{1}{4}$	5 $\frac{5}{8}$	8 $\frac{1}{4}$	3	1.00	3.00
508	8	2	3 $\frac{3}{8}$	11 $\frac{7}{8}$	5 $\frac{7}{8}$	3 $\frac{3}{4}$	10	4 $\frac{1}{2}$	1.20	4.00
510	10	3	3 $\frac{3}{4}$	14 $\frac{1}{8}$	6 $\frac{3}{8}$	3 $\frac{3}{4}$	11	6	1.50	5.00
512	12	4	4	16 $\frac{3}{8}$	6 $\frac{7}{8}$	1 $\frac{3}{16}$	12 $\frac{1}{2}$	7 $\frac{1}{2}$	2.00	6.50

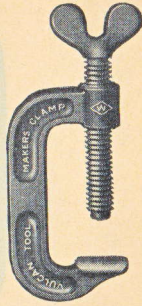
\*A special clamp No. 444, 4" capacity, with throat 1-1/2" deep, can be furnished; details on request.

**An attractive discount is given; see your jobber.**

WILLIAMS' "TOOL-MAKERS"  
DROP-FORGED "C" CLAMPS



With Swivel Screw



With Plain Screw

These Clamps are drop-forged from a strong, tough grade of steel and are heat-treated after forging to increase further their strength and reduce the liability of springing.

The Screws, with wings formed to permit use of lever, are supplied in two styles—Swivel and Plain. They are drop-forged from a special grade of steel and are hardened and tempered; threaded U. S. Standard. Both styles of Screws are interchangeable.

Clamps are furnished in gray, steelgrit-blasted finish.

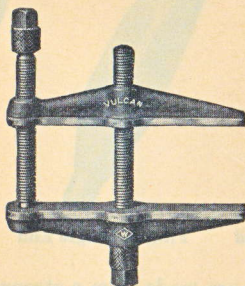
Clamps with Swivel Screw will be furnished, unless otherwise specified.

Number	Capacity		Depth of Throat	Extreme Dimensions		Screw		LIST PRICE	
	Max.	Min.		Length	Width	Diam.	Length	Extra Screw Only	Clamp, Complete
WITH PLAIN SCREW									
201	1	0	11 <sup>16</sup> / <sub>16</sub>	2 1 <sup>8</sup> / <sub>8</sub>	1 1 <sup>2</sup> / <sub>2</sub>	5 <sup>16</sup> / <sub>16</sub>	1 11 <sup>16</sup> / <sub>16</sub>	\$ .40	\$ 1.00
202	2	5 <sup>16</sup> / <sub>16</sub>	13 <sup>16</sup> / <sub>16</sub>	3 3 <sup>8</sup> / <sub>8</sub>	1 7 <sup>8</sup> / <sub>8</sub>	3 <sup>8</sup> / <sub>8</sub>	2 7 <sup>16</sup> / <sub>16</sub>	.50	1.30
203	3	11 <sup>16</sup> / <sub>16</sub>	15 <sup>16</sup> / <sub>16</sub>	4 1 <sup>2</sup> / <sub>2</sub>	2 1 <sup>8</sup> / <sub>8</sub>	3 <sup>8</sup> / <sub>8</sub>	3 3 <sup>16</sup> / <sub>16</sub>	.60	1.70
204	4-1 1 <sup>4</sup> / <sub>4</sub>	1 3 <sup>16</sup> / <sub>16</sub>	1 1 <sup>8</sup> / <sub>8</sub>	6 3 <sup>8</sup> / <sub>8</sub>	2 1 <sup>2</sup> / <sub>2</sub>	7 <sup>16</sup> / <sub>16</sub>	4 1 <sup>8</sup> / <sub>8</sub>	.80	2.50
WITH SWIVEL SCREW									
201	3 1 <sup>4</sup> / <sub>4</sub>	0	11 <sup>16</sup> / <sub>16</sub>	2 1 <sup>8</sup> / <sub>8</sub>	1 1 <sup>8</sup> / <sub>8</sub>	5 <sup>16</sup> / <sub>16</sub>	1 11 <sup>16</sup> / <sub>16</sub>	\$ .90	\$ 1.50
202	1-3 1 <sup>4</sup> / <sub>4</sub>	5 <sup>16</sup> / <sub>16</sub>	13 <sup>16</sup> / <sub>16</sub>	3 3 <sup>8</sup> / <sub>8</sub>	1 7 <sup>8</sup> / <sub>8</sub>	3 <sup>8</sup> / <sub>8</sub>	2 7 <sup>16</sup> / <sub>16</sub>	1.00	1.80
203	2-3 1 <sup>4</sup> / <sub>4</sub>	11 <sup>16</sup> / <sub>16</sub>	15 <sup>16</sup> / <sub>16</sub>	4 1 <sup>2</sup> / <sub>2</sub>	2 1 <sup>8</sup> / <sub>8</sub>	3 <sup>8</sup> / <sub>8</sub>	3 3 <sup>16</sup> / <sub>16</sub>	1.20	2.30
204	4	1 3 <sup>16</sup> / <sub>16</sub>	1 1 <sup>8</sup> / <sub>8</sub>	6 3 <sup>8</sup> / <sub>8</sub>	2 1 <sup>2</sup> / <sub>2</sub>	7 <sup>16</sup> / <sub>16</sub>	4 1 <sup>8</sup> / <sub>8</sub>	1.50	3.20

An attractive discount is given; see your jobber.



## WILLIAMS' "VULCAN" DROP-FORGED MACHINISTS' CLAMPS



These Clamps are drop-forged from a strong, tough grade of carefully selected steel and are heat-treated to increase further their strength and reduce the liability of springing.

The knurled portion of the hardened and tempered Screws permits rapid and easy adjustment.

The edges of the jaws are ground bright, thus adding to the appearance of the Clamp.

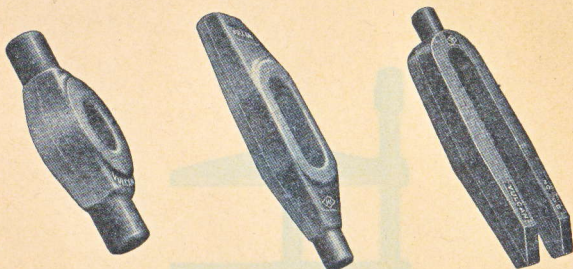
When ordering extra Screws specify whether for *end* or *center*; lengths given are under-head dimensions and prices for each of either screw.

**Each Clamp is packed in a box for convenient shelving.**

No.	Capacity		Screws				LIST PRICE	
	Maximum Opening	Length Jaw from Screw	End		Center		Extra Screws Each	Complete Clamp
			Diam.	Length	Diam.	Length		
301	1 1/4	1 3/4	5/16	2 1/8	5/16	2 5/8	\$ .50	\$ 3.00
302	2 1/4	2 1/4	3/8	3 1/4	3/8	3 15/16	.70	4.00
303	3 1/4	2 3/4	7/16	4 5/8	7/16	5 1/4	1.00	5.00
304	4 1/4	3 1/4	1/2	5 3/4	1/2	6 1/2	1.40	6.00

An attractive discount is given; see your jobber.

## WILLIAMS' "VULCAN" DROP-FORGED STRAP CLAMPS



Finger, Double End

Finger, Single End

"U" Pattern

These forgings are made from a strong, tough grade of carefully selected steel and are subjected to a special refining process or heat-treatment after forging, which greatly increases their strength.

*Continued next page.*

### FINGER PATTERN, DOUBLE END

No.	Length	Width Center	Thick-ness Center	Min. Diam. Hole	Finger Dimen-sions	LIST PRICE	No.
30	3	1 1/2	5/8	11/16	1/2 x 1/2	\$ .40	30
35	3 1/2	1 5/8	3/4	11/16	5/8 x 5/8	.50	35
40	4	1 13/16	7/8	13/16	3/4 x 3/4	.70	40

### FINGER PATTERN, SINGLE END

No.	Length	Width		Thickness		Slot, Min. Dimensions		Finger Dimen-sions	LIST PRICE	No.
		Flat End	Center	Flat End	Center	Length	Width			
44	4	13/16	15/8	7/16	3/4	1 3/8	11/16	1/2 x 1/2	\$ .60	44
46	6	1 1/4	1 3/4	1 1/2	7/8	1 15/16	11/16	5/8 x 5/8	1.00	46
48	8	1 1/2	2 1/8	5/8	1 1/8	2 9/16	13/16	3/4 x 3/4	1.70	48

### "U" PATTERN

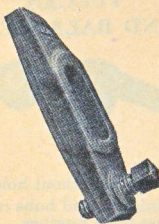
No.	Length	Maxi-mum Width	Thick-ness	Slot Minimum Dimensions		Finger Dimen-sions	LIST PRICE	No.
				Length	Width			
64	4 1/2	1 3/4	3/4	3 1/2	11/16	1/2 x 1/2	\$ .60	64
66	6 5/8	2	7/8	5 1/2	11/16	5/8 x 5/8	1.00	66
68	8 3/4	2 1/2	1 1/8	7 3/8	13/16	3/4 x 3/4	1.70	68

An attractive discount is given; see your jobber.

# WILLIAMS' "VULCAN" DROP-FORGED STRAP CLAMPS



Plain Slot



Adjustable Step



Goose Neck

Because of draft or taper on forgings, minimum dimensions of opening are given in table.

On Planer, Lathe, Drill Press, Milling and Boring Machine work they are time-saving and effective.

*Continued from preceding page.*

## PLAIN SLOT PATTERN

No.	Length	Width		Thickness		Slot, Minimum Dimensions		LIST PRICE	No.
		Ends	Center	Ends	Center	Length	Width		
54	4	$1\frac{3}{16}$	$1\frac{5}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{3}{8}$	$\frac{11}{16}$	\$ .60	54
56	6	$1\frac{1}{4}$	$1\frac{3}{4}$	$\frac{9}{16}$	$\frac{7}{8}$	$2\frac{1}{16}$	$\frac{11}{16}$	1.00	56
58	8	$1\frac{1}{2}$	$2\frac{1}{8}$	$\frac{3}{4}$	$1\frac{1}{8}$	$2\frac{13}{16}$	$\frac{13}{16}$	1.70	58
59	10	$1\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{5}{16}$	$1\frac{3}{8}$	$3\frac{11}{16}$	$\frac{15}{16}$	2.80	59

## ADJUSTABLE STEP PATTERN

No.	Length	Width		Thickness		Slot, Minimum Dimensions	Screws		LIST PRICE		No.
		Ends	Cent.	Ends	Cent.		Dia.	Length Under Head	Extra Screws Each	Complete Clamps Each	
54A	4	$1\frac{3}{16}$	$1\frac{5}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{16} \times 1\frac{3}{8}$	$\frac{1}{2}$	$1\frac{1}{4}$	\$ .28	\$1.10	54A
56A	6	$1\frac{1}{4}$	$1\frac{3}{4}$	$\frac{9}{16}$	$\frac{7}{8}$	$1\frac{1}{16} \times 2\frac{1}{16}$	$\frac{5}{8}$	$1\frac{1}{2}$	.36	1.70	56A
58A	8	$1\frac{1}{2}$	$2\frac{1}{8}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{3}{16} \times 2\frac{13}{16}$	$\frac{3}{4}$	$1\frac{3}{4}$	.50	2.60	58A
59A	10	$1\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{5}{16}$	$1\frac{3}{8}$	$1\frac{5}{16} \times 3\frac{11}{16}$	$\frac{7}{8}$	$2\frac{1}{8}$	.70	4.00	59A

## GOOSE NECK PATTERN

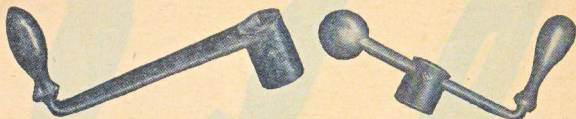
No.	Length	Width		Thickness		Slot, Min. Dimensions		Neck Offset	LIST PRICE	No.
		Ends	Cent.	Ends	Cent.	Length	Width			
74	4	$1\frac{3}{16}$	$1\frac{5}{8}$	$\frac{3}{8} \& \frac{1}{2}$	$\frac{3}{4}$	$\frac{15}{16}$	$\frac{11}{16}$	$\frac{13}{16}$	\$ .60	74
76	6	$1\frac{1}{4}$	$1\frac{3}{4}$	$\frac{7}{16} \& \frac{9}{16}$	$\frac{7}{8}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{15}{16}$	1.00	76
78	8	$1\frac{1}{2}$	$2\frac{1}{8}$	$\frac{9}{16} \& \frac{3}{4}$	$1\frac{1}{8}$	$2\frac{7}{16}$	$\frac{13}{16}$	$1\frac{1}{8}$	1.70	78

An attractive discount is given; see your jobber.





## “VULCAN” CRANK AND BALANCE HANDLES



Unfinished are plain forgings without hole in hub.

Broached have holes finished, and hubs recessed or counterbored in free end, but are otherwise plain forgings.

Finished are broached, counterbored, ground, polished, case-hardened all over and gray enameled.

No.	Length			Hub		Square Hole Size Broached		LIST PRICE		
	C Hub to C Handle	Extreme	Handle Above Arm	Diameter	Length	Standard in Stock	Maximum to Order	Unfinished	Broached	Finished
<b>CRANK HANDLES</b>										
00	1 $\frac{3}{4}$	2 $\frac{5}{8}$	2 $\frac{3}{8}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{5}{8}$	\$ .70	\$1.22	\$1.85
0	2 $\frac{1}{4}$	3 $\frac{1}{8}$	2 $\frac{1}{2}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{5}{8}$	.78	1.30	2.00
1	3	4	2 $\frac{3}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{9}{16}$	$\frac{13}{16}$	.88	1.40	2.30
2	3 $\frac{1}{2}$	4 $\frac{1}{2}$	2 $\frac{7}{8}$	1 $\frac{1}{16}$	1 $\frac{5}{16}$	1 $\frac{1}{2}$	$\frac{5}{8}$	.88	1.40	2.30
4	4	5 $\frac{1}{8}$	3 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	$\frac{9}{16}$	$\frac{13}{16}$	1.05	1.60	2.65
6	5	6 $\frac{1}{8}$	3 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{13}{16}$	$\frac{5}{8}$	$\frac{13}{16}$	1.30	1.95	3.15
8	6	7 $\frac{1}{8}$	3 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{15}{16}$	$\frac{11}{16}$	$\frac{13}{16}$	1.65	2.40	3.85
10	7	8 $\frac{1}{4}$	3 $\frac{3}{8}$	1 $\frac{3}{8}$	2 $\frac{1}{16}$	$\frac{3}{4}$	$\frac{7}{8}$	2.10	2.95	4.75
12	8	9 $\frac{3}{8}$	3 $\frac{5}{8}$	1 $\frac{9}{16}$	2 $\frac{7}{16}$	$\frac{7}{8}$	1	2.65	3.60	5.80
14	9 $\frac{1}{8}$	10 $\frac{1}{2}$	3 $\frac{3}{4}$	1 $\frac{1}{2}$	2 $\frac{1}{2}$	$\frac{7}{8}$	1	3.00	4.00	6.50
16	10	11 $\frac{1}{2}$	4	1 $\frac{3}{4}$	3	1	1 $\frac{1}{8}$	3.95	5.15	8.15

### BALANCE HANDLES

512	1 $\frac{1}{4}$	3 $\frac{5}{16}$	1 $\frac{15}{16}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{2}$	\$ .79	\$1.32	\$2.30
516	1 $\frac{5}{8}$	4	2 $\frac{1}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	.87	1.40	2.45
*520	2	5	2 $\frac{5}{8}$	1	$\frac{15}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	.96	1.49	2.65
*522	2 $\frac{1}{4}$	5 $\frac{1}{2}$	2 $\frac{3}{4}$	1 $\frac{1}{4}$	1	$\frac{1}{2}$	$\frac{13}{16}$	1.05	1.58	2.90
*525	2 $\frac{1}{2}$	6	2 $\frac{13}{16}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$	$\frac{5}{8}$	$\frac{13}{16}$	1.23	1.85	3.30
529	2 $\frac{7}{8}$	7	3 $\frac{5}{16}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	$\frac{5}{8}$	$\frac{13}{16}$	1.50	2.10	3.85
434	3 $\frac{3}{8}$	8	3 $\frac{7}{16}$	†1 $\frac{1}{2}$	$\frac{7}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	2.10	2.70	4.90
439	3 $\frac{7}{8}$	9	3 $\frac{1}{2}$	†1 $\frac{5}{8}$	1 $\frac{1}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	2.65	3.25	5.90

### Diameter Ball

No. 512,  $\frac{7}{8}$  in. No. 520,  $1\frac{1}{4}$  in. No. 525,  $1\frac{1}{16}$  in. No. 434,  $1\frac{3}{4}$  in.  
No. 516,  $1\frac{1}{4}$  in. No. 522,  $1\frac{3}{8}$  in. No. 529,  $1\frac{1}{2}$  in. No. 439,  $1\frac{3}{4}$  in.

\* Handle cone-shaped; see Crank Handle—illustration.

† Hub is a sphere, flattened on top and bottom; full size drawing on request.

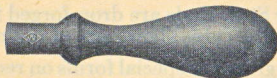
**An attractive discount is given; see your jobber.**



**"VULCAN"**  
MACHINE HANDLE FORGINGS

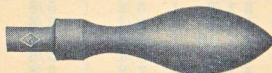
Unfinished  
With Smooth, Planished Surface

**BALL PATTERN**



Number	Extreme Length	Standard Length, Shank	Maximum Length, Shank	Diameter Shank	LIST PRICE
00	2	1/2	11/16	5/16	\$ .21
0	2-1/4	1/2	3/4	11/32	.21
1	2-3/4	5/8	1	13/32	.23
2	3-1/4	3/4	1-1/8	15/32	.29
3	3-7/8	7/8	1-1/4	15/32	.36
4	4-1/2	1	1-1/2	17/32	.46
5	5-1/8	1-1/8	1-7/8	19/32	.57
6	5-7/8	1-1/4	2	11/16	.69
7	6-5/8	1-1/2	2-1/8	3/4	.84

**CONE PATTERN**



Number	Extreme Length	Standard Length, Shank	Maximum Length, Shank	Diameter Shank	LIST PRICE
11	3-1/2	1/2	11/16	3/8	\$ .29
13	4-1/2	3/4	1-1/8	7/16	.46
15	5-1/2	7/8	1-3/8	1/2	.57
16	6	1-1/8	1-1/2	9/16	.69

An attractive discount is given; see your jobber.



## DROP-FORGED ROD ENDS

### Unfinished



These Rod or Stub Ends are drop-forged from mild steel which welds easily. Table shows size of unfinished forgings.

Prices will be given for special forms on receipt of models, or drawings and specifications stating quantity required.

No.	Shank		Head		LIST PRICE	
	Diam.	Standard Length under Head	Diam.	Thickness	Extra Length per inch or less	Std. Rod Ends, Each
0B	3/16	4 13/16	3/8	1/4	.....	\$ .17
1B	1/4	2 11/16	9/16	1/2	.....	.16
1C	1/4	*5	5/8	1/4	\$ .03	.18
1D	1/4	*2 3/8	7/16	1/4	.03	.12
1-1/2A	9/32	*5	11/16	9/32	.03	.28
2A	5/16	*3 3/4	3/4	7/16	.03	.19
2B	5/16	3 1/8	3/4	5/16	.....	.09
2C	5/16	5 3/4	3/4	3/8	.....	.17
2D	5/16	1 1/4	13/16	3/8	.....	.10
3A	3/8	*2	1	3/8	.03	.10
3B	3/8	*3 3/8	21/32 <sup>1</sup>	3/4	.04	.36
3C	3/8	*3 1/2	13/16	3/8	.04	.10
3D	3/8	*3 1/2	9/16	9/16	.04	.19
3E	3/8	3 1/8	5/8	5/8	.....	.18
3F	3/8	1 1/8	3/4	3/8	.....	.08
3G	3/8	1 7/16	5/8	3/8	.....	.09
3H	3/8	1 5/8	3/4	3/8	.....	.10
3J	3/8	3 1/16	7/8	3/8	.....	.14
4B	7/16	*4 1/2	15/16	5/8	.04	.19
4C	7/16	*3 3/8	13/16 <sup>3</sup>	3/4	.04	.31
4D	7/16	*2 1/2	5/8	1/2	.04	.21
4E	7/16	1 3/4	13/16	5/16	.....	.19
5A	1/2	*4 3/8	1	1/2	.06	.17
†5B	1/2	2 3/8	3/4	3/4	.....	.21
5C	1/2	3 1/16	7/8	7/16	.....	.14
5D	1/2	*2 7/8	3/4 <sup>2</sup>	13/16	.06	.19

*Continued next page.*

An attractive discount is given; see your jobber.





## DROP-FORGED ROD ENDS

### Unfinished

*Continued from preceding page.*

No.	Shank		Head		LIST PRICE	
	Diam.	Standard Length under Head	Diam.	Thickness	Extra Length per inch or less	Std. Rod Ends, Each
5E	1/2	*2 1/8	1 1/16	9/16	\$ .06	\$ .12
5F	1/2	2 1/16	13/16	11/32	.....	.14
5G	1/2	*12	1	7/16	.06	.72
6A	9/16	2	1 1/16	7/16	.....	.13
6B	9/16	1	7/8	11/16	.....	.31
6C	9/16	2 3/8	15/16	3/8	.....	.27
6-1/2A	5/8	4 5/16	7/8	5/16	.....	.36
7A	5/8	*2 3/8	1 1/8	15/32	.08	.16
7B	5/8	*4 7/8	1 1/4	19/32	.08	.28
7C	5/8	1 1/2	1 3/4	5/8	.....	.35
7D	5/8	*7 1/2	1 5/32	21/32	.08	.52
7E	5/8	*5 7/8	1 1/8 <sup>3</sup>	1 1/16	.08	.44
7F	5/8	*4 1/2	1 7/16	11/16	.08	.43
7G	5/8	2 5/16	1	7/16	.....	.30
7H	5/8	3	1 1/16	7/16	.....	.26
9A	3/4	*3 7/8	1 3/4	5/8	.08	.46
9B	3/4	*4	1 1/2	13/16	.08	.37
9C	3/4	*4 3/8	1 1/8	3/4	.08	.37
9D	3/4	3 7/8	1 1/8	1/2	.....	.24
11A	7/8	*3 1/2	1 1/2	1 1/16	.10	.46
11B	7/8	*4	2	15/16	.10	.64
11C	7/8	4 3/4	1 7/16	5/8	.....	.37
11D	7/8	4 3/4	1 1/8	1 5/32	.....	.55
†13A	1	*6	2 15/16	1 1/4	.12	1.50
13B	1	*3 1/2	1 5/8	1 1/2	.12	.72
13C	1	*3 1/2	1 15/32	1 1/8	.12	.63
14A	1 1/16	*5 3/4	2 1/16	1 1/8	.12	.60
15A	1 1/8	*5	1 13/16	1 1/8	.14	.92
15B	1 1/8	*6	2 1/4	1 1/4	.14	1.51
17A	1 1/4	*6	2 5/16	1 1/2	.16	1.60
19A	1 3/8	*7 1/4	2 3/8	1 1/2	.18	1.72

\* Can be furnished longer if desired.

† Head off-set from center of shank 3/64 inch.

‡ Hole in head, 1-1/4 inch diameter.

<sup>1</sup> Largest Diameter Head, 1 inch.

<sup>2</sup> Largest Diameter Head, 1-1/8 inch.

<sup>3</sup> Largest Diameter Head, 1-9/16 inch.

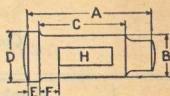
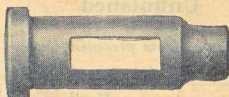
**An attractive discount is given; see your jobber.**

# WILLIAMS

SUPERIOR DROP-FORGED TOOLS

## "VULCAN" TOOL POST FITTINGS Unfinished

### TOOL POSTS Openings Punched Out



Number	5	10	20	23	28	30	40	50	60
Length A . . .	2 15/16	4 1/16	4 9/16	5	5 3/16	5 1/4	6 5/16	7 3/8	8 3/4
Body									
Diam. B. . .	1 1/32	1 1/4	1 5/8	1 7/16	1 9/16	1 13/16	2 1/16	2 1/4	2 31/32
Length C . . .	2	2 7/8	3 1/4	3 1/2	3 11/16	3 3/4	4 3/8	5	6
Base Diam.									
Diam. D. . .	1 7/32	1 5/8	2 1/8	1 7/8	2 1/16	2 5/16	2 5/8	2 15/16	3 5/8
Thick. E. . .	5/16	1/4	7/16	5/16	5/16	1/2	9/16	5/8	3/4
Base to									
Openg. F. . .	7/16	1/2	13/16	5/8	5/8	15/16	1 3/16	1 3/8	1 1/2
Opening	1 5/16	1 15/16	1 7/8	2 1/2	2 11/16	2 1/8	2 1/2	2 7/8	3 9/16
Size H. . . .	x 7/16	x 19/32	x 11/16	x 21/32	x 11/16	x 3/4	x 7/8	x 15/16	x 1
For use with									
Wedge. . . .	5	10	15 & 18	15	15 & 18	18 & 20	30 & 40	60	
For use with									
Ring. . . . .	5	10	11	14	18	20	30 & 40	60	
LIST PRICE	\$ .82	\$1.05	\$1.40	\$1.65	\$1.90	\$2.10	\$3.05	\$3.95	\$7.95

### TOOL POST WEDGES



For Changing  
Angles of  
Lathe Tools

Number	5	10	11	15	18	20	30	40	60	65
Length. . . . .	2 13/32	3	3 3/8	3 3/8	3 7/8	3 7/8	4 3/8	4 7/8	5 1/4	5 5/16
Width, Extreme. . .	1/2	21/32	19/32	23/32	3/4	13/16	7/8	15/16	1 3/32	1 1/32
Extreme Thickness	11/32	31/64	25/64	7/16	15/32	17/32	1/2	21/32	3/4	29/32
Radius. . . . .	3	2 7/8	4 5/8	4 5/8	4 1/2	4 3/4	5 1/2	5 3/4	6	5
For Use with Post.	5	10	20	20	30	30	40	40	50	
For Use with Ring.	5	10	11	11	11 & 20	20	30	40	60	
LIST PRICE . . . .	\$ .27	\$ .30	\$ .30	\$ .33	\$ .34	\$ .35	\$ .40	\$ .47	\$ .56	\$ .61

### TOOL POST RINGS



For Changing  
Angles of  
Lathe Tools

Number	5	10	11	14	18	20	30	40	60
Diameter, Outside. . .	2 1/4	2 15/16	3	3 3/16	3 7/16	3 1/2	3 1/2	4	4 1/2
Diameter, Hole. . . .	1 1/16	1 5/16	1 5/8	1 7/16	1 9/16	1 3/4	2	2	2 3/16
Thickness, Edge . . .	3/8	7/16	7/16	5/8	11/16	9/16	3/4	3/4	3/4
Radius of Concave . .	3	2 7/8	4 5/8	4 5/8	4 1/2	4 3/4	5 1/2	5 3/4	6
For Use with Post . . .	5	10	20	23	28	30	40	40	50
For Use with Wedge. .	5	10	11 & 15	18 & 20	18	18 & 20	30	40	60
LIST PRICE . . . . .	\$ .33	\$ .47	\$ .52	\$ .75	\$ .94	\$ .82	\$1.00	\$1.15	\$1.50

A full line of "Superior" Tool Post Wrenches is in stock.  
Ask for Booklet A-81.